

CLAIMS

1. A semiconductor device module structure comprising:

a high-resistance layer of a first conductive type;

5 a base layer of a second conductive type formed in an upper part of the high-resistance layer of the first conductive type;

an emitter region of a first conductive type formed in an upper part of the base layer of the second conductive type;

an emitter electrode connected to the emitter region;

10 an insulated gate electrode adjacent to the base layer of the second conductive type;

a guard ring part where diffusion around a cell region including the emitter region has been made deep;

15 a passivation layer formed on the upper part of the guard ring part and not extending onto the upper part of the cell region;

a collector layer of the second conductive type formed on the underside of a buffer layer of the first conductive type;

a collector electrode connected to the collector layer; and

20 a metal flat plate upper heat-sinking part connected to the emitter electrode at a height such that it is non-contacting with the passivation film.

2. The semiconductor device module structure of claim 1, characterized in that the module structure of a semiconductor device further comprises a diode part, and a cathode electrode at an upper part of the diode part and the upper
25 heat-sinking part are connected.